Reimagining PK-12 Schools for the 4th Industrial Revolution: A New Design DNA for Schools

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Program Abstract

Introduction

For years Education Planners and Architects have discussed and tested design ideas for new schools built in the rapidly unfolding 21st century. But while ideas about transforming the curriculum and expanding the pedagogical toolkit evolved, the notion of how the design a new school should be organized remained static. This session will present the elements of a new programming language for creating new PK-12 Schools.

As 2023 begins, we look around and realize we are no longer designing schools for the children of tomorrow. We are now in the first years of the Fourth Industrial Revolution. Or perhaps we should call this the Fourth Technological Revolution? Architects, planners, educators, and administrators must realign their design ideas to create teaching and learning environments relevant for the children of this new age. But what is this new age we have entered? How did we get here? What hard academic and soft social skills do our children and grandchildren need to be successful in this new era? How must the learning environment of PK-12 schools evolve to get them there? **We now have all the design and pedagogical tools we need to create a learning environment to support truly liberated learners. Let's get to it!**

The Presentation Overview

If you threw out the traditional design rules for a PK-12 school, the government-mandated directives on how to design a school, and started from scratch, what would it look like? What would emerge if you started with a blank sheet of paper and considered the child's needs first?

It's been evident for many years now to all of us in this specialized design field that the antiquated "Cells and Bells" school model can no longer support the development of the human skills, competencies, and behaviors essential for young adults at this time in our history and in the coming decades. To succeed in the rapidly developing, AI-Driven digital world of the mid-21st century, a school's learning environment must prepare students to thrive in the fourth industrial revolution.

For this presentation, I will focus on the new Garden City Elementary School, one of the first schools in the northeast to be conceived using a new programming language or "Design DNA." The old design rulebooks were thrown out for the new Garden City

School. There are no corridors with rows of self-contained classrooms. The entire school is designed around the design concept of a Learning Community model.

A Learning Community is a powerful ensemble of spaces. At its heart is a shared "Learning Commons," a social hub and central venue for teaching and student-directed learning. Surrounding this agile and flexible learning hub is a collection of learning studios, smaller than the traditional classroom and in assorted sizes, plus a collection of small group rooms and seminar spaces.

The result is rather liberating for the students and teachers. This new programming approach focuses on the needs of the student rather than a pre-conceived architectural design idea, where the needs of the student come in second.

With the elimination of corridors and autonomous classrooms, new freedom in the Language of School Design has occurred. In reaction to this shift in pedagogical programming, the fundamental morphology "School" building design has shifted away from the rectilinear factory or office building form to something more organic.

New schools must be far more than a place to work and learn. It is also where we build relationships with others, find out how we work collaboratively, develop a sense of ourselves, and discover how we fit into our world and society. We believe that it takes an entire community to educate a child. Learning Community design strategies are grounded in best practices for cognitive development and learning while proactively focused on Wellness and Well-being, digital innovation, and problem-solving.

Presentation Topics
This presentation will be interactive and is designed to inform and connect with Thinker, Leaders, Planners, Educators, Teachers, and Students.

Introduction – What is the 4th "Technological" Revolution?

- What were the 1st, 2nd, and 3rd Industrial Revolutions?
- What was the impact of these revolutions on the development of School education?
- Discuss the critical human skills necessary for happiness and success in this new era.

The Learning Community Model – A new programming DNA for today's schools

We will ask the attendees to consider this new program approach and sketch out what kind of school forms they might envision using this new DNA. I will post some of these sketches on the big screen.

- Design Precedent – The Eden Park Pathfinder, 2019
- Design Precedent – Col-legi Montserrat Early Education Center, 2018
- The Elements of a Learning Community Program

- An Analysis of the Garden City Elementary School
- Discussion of Programming diagrams

Key Design Considerations - To balance sustainability, Wellness, and Well-being, we need to consider many design and construction considerations. We will touch upon the following issues. For this non-technical audience it will be a light touch!

- Exterior building shell construction
- The place of windows and natural light and ventilation.
- Exceeding ASHRAE standards for mechanical air circulation and filtration.
- Security concerns and the "ALICE" protocols
- Fire Egress and Life Safety strategies
- Innovative approaches to artificial lighting.
- New acoustical design standards for more open learning environments.
- Education technology and integrated mass communications in the new learning environment.
- The evolution of the "Teaching Wall."
- Natural behavior in the "Learning Studio."
- A re-evaluation of flooring materials and finishes
- The impact of color in schools.
- The outdoor classroom
- Active Halls
- The Social Heart

Where are the New Jobs? - In the next 10-20 years, what kind of new jobs will be out there? What kind of jobs will disappear? Below are 5 of 15 on my list. We will ask the attendees to add to this growing list and also ask what kinds of curriculum changes will be necessary.

- Design and programming for Machine Intelligence/AI
- Psychologists for Artificial intelligence.
- Haptic Engineering
- Blockchain programming
- Design of Bio-Medical, Bio-Engineered, and Cybernetic implants

Final Thoughts – "8 Things Every School Must Do To Prepare For The 4th Industrial Revolution." Originally written by Bernard Marr, published in Forbes Magazine, May 23, 2019. Updated and edited by Jay Litman, AIA.